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A Resource-based Approach to Fallacy Theory

John Woods
University of British Columbia

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Author: John Woods
Commentary: Larry Powers

Introduction

Hans Hansen has recently performed the estimable service of showing that the idea of a fallacy as an invalid argument that appears to be valid is neither historically nor presently the standard definition of it (Hansen,2002).[1] In so doing, he corrects a common misconception, which is the standard understanding of fallacy among the laity. So Hansen has diagnosed a fallacy about fallacies.

The laity apart, what's wrong with the "standard definition" is that it is too particular, concentrating over-much on invalidity. In a more suitably general way, it is fruitful to think of a fallacy as a kind of mistake that makes the performance of a cognitive task subpar in one or other of a variety of respects. I won't here attempt to elucidate the notion of a cognitive task beyond saying that cognitive tasks are a proper subset of things that an agent may be said to be able to *do* (or to try to do); and that they are of a kind that, when done in a subpar way, it may also be said that the agent could have done otherwise, could have done better. Notwithstanding, fallacies so conceived also have the intriguing (and long recognized) feature of being subpar in ways of doing certain things which appear not to be subpar. By these lights, an agent conducts himself fallaciously when he draws an inference, makes a decision, engages in a dispute, or such like, in ways that make what he did less than it should and could have been.

Let me now try to set my course. I won't have anything like the time to do much more than to sketch it here; so what I shall be doing is largely of a promissory character. The fuller story is currently being detailed by Dov Gabbay and me in *Seductions and Shortcuts: Fallacies in the Cognitive Economy*, which is volume three of our omnibus work in progress, *A Practical Logic of Cognitive Systems*. The thesis that I want to propose is a twofold one:

1. In attributing fallacious performance to someone, the principle of "ought implies can" applies. This being so, it is necessary for the fallacy theorist to take into account what beings like us (and others, too) are *like*. I shall suggest that *practical agency* is a central consideration in answering this question.
2. Yet, what we are capable of is only one of the parameters involved in fallacy-making. There are several others as well. Accordingly, the two-parameter approach (i.e., (1) *looks so-and-so*, but (2) *really isn't*) is inadequate.

Practical Agents

A practical logic of cognitive systems (*PLCS*) can be conceived of in the following way.

-- a logic is a principled description of (various aspects) of the behaviour of a cognitive system
-- a cognitive system is an ordered triple of an agent *C*, cognitive resources *R* and cognitive tasks *T* performed in real time
-- a cognitive agent is an information-processing device capable of belief, inference and decision
-- a cognitive agent is an agent of a certain type, depending on where he or it sits under the partial order "commands greater resources than"
-- such resources include information, time and computational capacity
-- a cognitive agent is a practical agent to the extent that it ranks low in this partial ordering
-- accordingly, practical reasoning is the reasoning of a practical agent
-- a cognitive agent is a theoretical agent to the extent that it sits high in this same partial ordering
-- accordingly, theoretical reasoning is the reasoning done by theoretical agents
-- practical agents include *individuals*
-- theoretical agents include *institutions*
-- it cannot in general be supposed that practical and theoretical reasoning are subject to the same performance standards
-- from the point of view of theoretical agency, practical reasoners operate with scarce-resources
-- accordingly, we postulate for practical reasoners scarce-resource compensation strategies
-- these include or involve (among other things)
    1. a propensity for *hasty generalization*
    2. a facility with *generic inference*
    3. easy discernment of *natural kinds*
    4. a propensity for *default reasoning*
    5. a disposition toward belief-update and discourse *economies*, such as, reliance upon the assurance of others.
    6. *unconscious* cognition

On the face of it, a practical agent's scarce-resource compensation strategies are rife with fallacy. Should we not conclude, therefore, that practical agency and practical reasoning are intrinsically subpar? Is it not the case that individuals are intrinsically irrational? No. Here is why.

Parameters of the Subpar

What is subpar performance? What is it to judge that someone's cognitive conduct is not up to snuff? It is to judge the action or actions in the light of various criterial considerations. One is what the agent's *goal* is. Another is the *standard* that he needs to hit for that goal to be attained; in other words, the agent's means to that goal. So, for example, a cognitive agent may

have as his goal the presentation of a truth-preserving demonstration of a certain proposition. That being so, it is appropriate that his standard would be (in part) an argument that is valid. A third factor in judging an agent's cognitive performance is his *general competence*. In mentioning it, we reveal an interest in determining whether this is a goal whose satisfaction by those means (i.e., by hitting that standard) is something that he is able to do. A fourth consideration has to do with local circumstance. An agent may have the general capacity to achieve a certain goal in a certain way, but, owing to present particularities, not be able to achieve it or to achieve it in that way. In citing this factor, we are recognizing the importance, beyond general capability and means-end adroitness, of cognitive resource-contingencies such as (again) *information, time* and *computational capacity*.

Jointly these factors give the following blueprint of an agent's performance of a cognitive task. A cognitive goal *G* is either attainable or not. (A proof of Fermat's Last Theorem is attainable; a proof of the joint consistency and completeness of Peano-arithmetic is not.) If a goal is attainable, then for any agent *X*, it falls within *X*'s general competence or not. (A proof of the completeness of modal logic was within Kripke's reach but not, we may suppose, Hannah Arendt's.) If *X* has an attainable goal that lies within her general competence, the means she selects (or the standard she sets) may be appropriate for that goal or not. If, for example, *X* undertakes to show for some proposition *P* that *P* is something that might reasonably be believed, her standard may include an argument for *P* that meets the standard of validity. In her quest to justify a belief in *P* in this way *X* would be at risk for two performance errors. Either validity may be an inappropriate way of achieving this goal, or it may be appropriate but beyond *X*'s reach. *X* might not know how to construct valid arguments (Hannah Arendt, again). If *X* has an attainable goal that is within her general competence, for which an appropriate means *S* is also within her grasp, *X* may lack additional resources necessary for the completion of her task. She might not have information, *I*, enough to command the desired means; or she may lack the time, *T*, to achieve her objective in this way; or she may lack the computational power, *C*, to do the calculations that her task may require of her. Alternatively, given the comparative scarcity of such resources for real-life individuals in actual situations of cognitive effort, an agent may lack the means of achieving the goal. If, again, an agent's goal is to show that it is reasonable to believe that *P*, he may decide that an axiomatic proof of *P* is not a means for which he is adequately resourced at present; and he might try instead for a conditional proof relative to what is widely held by experts.

There are, then, several basic ways in which an agent's cognitive performance can go wrong:

1. *X* might set himself an unattainable goal *G*.
2. *X* might set himself an attainable *G* that is not within his general competence.
3. *X* may set himself an attainable *G* for which he is generally competent, but his selected means (or goal-realization standard) *S* is either beyond his reach or inappropriate to the task at hand.
4. *X* may set himself an attainable *G* for which he is generally competent and set himself an appropriate *S* that lies within his reach, and yet he might lack necessary collateral resources, such as *I*, *T* and *C*.

When this last condition is met, I shall say that *G* is an attainable goal for which *X* is generally competent, that *S* is a realizable and appropriate means for *X* to set in relation to *G*, but that for lack of such things as information, time and fire-power, *G* sets a task that is *too big* for *X*.

Ed Koch on his walking tours of New York when he was mayor, famously would ask, "How am I doing?" I daresay in inviting this assessment of his performance as chief magistrate, he was unaware of the template that structures a fair response. It is a template that structures the assessment in terms of *G, S, I, T* and *C.* Awareness aside, what's good enough for Mayor Koch is certainly good enough for the rest of us. These are the structural elements necessary for a finding of "subpar" with respect to the ranges of cognitive performance that draw the attention of fallacy theorists.

It is here that one of my basic principles secures a firm purchase. On the principle that "ought" implies "can", no practical agent can be faulted for mismanaging a cognitive task that is too big for him. Whatever we say about such (mis)performances, they are not *fallacious*.[2]

Fallacies

Fallacies, we were saying, afflict subpar cognitive effort with the appearance that all is well. This leaves the fallacy theorist with two tasks, one of which is widely performed and the other of which draws hardly a word. The first is to say something about what subpar cognitive performance consists in, especially as concerns the usual run of values for '*S*.' The other is to elucidate the factor of false inapparency. There are theorists galore who rush in with preferred accounts of, e.g., validity and inductive strength; but next to nothing is said of the mere (and mistaken) appearances thereof. Why is this? The likely explanation is that most of us tend to think that the look of goodness that bad things sometimes have is a wholly psychological matter, whose sorting out is the business not of the fallacy theorist, but rather of the psychologist. If, on top of that, one chances to think that fallacy theory is the rightful (though not necessarily exclusive) business of logic, then the bogey of psychologism looms with explanatory potential.[3] Mind you, not everyone sees these false appearances as matters for psychology. Larry Powers [1997] is a case in point. Appearing valid, he thinks, is an objective property of certain classes of invalid arguments. It is an attractive idea, in as much as it averts what is sometimes called the Fallacies Dilemma. Suppose that I think that something is a fallacy. Then if the psychological construal of the false apparency problem is the way to go, I must think that it is invalid (or otherwise non-*S*), and I must also think that it is valid (or otherwise *S*). But if these false appearances are properties of arguments, rather than states of minds, or states of minds in relation to arguments, then to judge that an argument appears to be valid (or otherwise *S*), it is unnecessary that I *believe* that it is valid (or *S*), whereupon the Fallacies Dilemma just collapses. I am, therefore, rooting for Powers someday to give an account of these objective appearances of arguments. Meanwhile, I shall try my own hand below.

While not in the least slighting the importance of the twofold undertaking we have been reflecting on just now, there are three further tasks which, if left unperformed, will leave fallacy theory in a significantly under-developed condition. They are

3. the joint task of determining what is the appropriate goal *G* for a given argument to aim for, and what are the standards *S* the meeting of which would achieve that goal; and
4. the connected task of fixing upon that *G* and selecting that *S*, in light of the argument-makers command of cognitive assets such as *I*, *T*, and *C*; and
5. the task of explaining what it is about beings like us that makes us susceptible to the false apparency problem.

Let me briefly illustrate task (3). Consider the argument that establishes Tarski's Theorem (or any other mathematical theorem that appeals to you). The applicable goal is an extension of the legal concept of moral certainty: the argument for Tarski's Theorem must confer certainty upon it. This is done in two steps. We pick premisses[4] that have already attained this goal; and we employ a consequence relation that guarantees that its consequent attains that goal if its antecedent does.[5] In short, what we require in the present case is that *S* be validity.

Few would doubt that we have here a reasonable goal and an appropriate standard for attaining it. Perhaps it is not wholly surprising, therefore, that people should have found themselves drawn to the idea that the validity standard should be made canonical for all reasoning, or anyhow for reasoning at its best. Notwithstanding the attractiveness of the urge to "optimize" in this way, it is a mistake. Not everything that one desires to know, and is right in desiring to know, is ascertainable by strict consequence from premises that are certain. If you want to know whether ravens are black, there is nothing better to go on than that a great many are and none, so far as we know, that aren't. True, what makes deductivism and some breeds of rationalism interesting is their rejection of this point. But, lacking the time for exhaustive engagement, I shall here simply reject the rejection.

Here is another case. I want to know if putting my finger in the bouncing blue flame of the acetylene torch will hurt. I do, and it does. I am certain that it does even though my reasoning doesn't hit the validity standard. This exhibits an important difference from the previous case. We saw there that validity is the wrong standard with respect to a desire to know whether ravens are black. It is also misconceived to want to know what we were interested in knowing with complete certainty. Sometimes, of course, certainty is unachievable without validity. For a certain range of cases, if validity is unachievable, the certainty goal is unattainable. This interdependence is lost in the second case. The certainty of my ravaged finger is attainable without hitting the validity standard.

I leave it as an exercise to extend this same moral to other values of *S* (e.g., inductive strength) in relation to other values of *G* (e.g., justified belief).

Particular Cases

For practical agents, hasty generalization is as natural as breathing. What is striking about the hasty generalization that we tend actually to make is not that they lack inductive strength (which they do, obviously), and not that we end up with the wrong answer. What is striking is that we end up with the right answer (or some near thing). Consider the following three cases.

1. The *scorpion*. You're at the beach in Tunisia. Next to you a fellow fallacy theorist is dozing. Suddenly he cries out and leaps to his feet, and a scorpion drops from his punctured chest. Your friend thrashes about and falls dead. Should you doubt that scorpions are bad news?
2. *Thundersticks*. The Spaniards are newly arrived in Mexico. They are having a spot of bother with the locals. A trigger-happy conquistador shoots their chief dead. Should they not conclude that thundersticks are problematic?
3. *The field goal*. On his first visit to Hamilton a French fallacy theorist is taken to a CFL game. At a certain point, Hitchcock says, "Ah, they're trying for a field goal." The ball flies through the uprights, officials raise their arms and the score-board changes by three. Should the visitor not conclude that a field goal is worth three points in Canadian football?

If our target in these cases were to hit the standard of inductive strength, we would have struck out badly each time. If inductive strength were somehow the required target, we would have performed at subpar. But, even so, we would not have committed a fallacy unless a further condition demanded to be met. It is that these generalizations would better have been deferred until experimental trials had been conducted or bylaws carefully inspected. But does anyone seriously believe this?

Consider now a fourth case. It is for obvious reasons a trickier case.

4. *The flight*. You're taking a stroll at dusk in New Haven, not far from the train station. The streets are deserted except for three young black men approaching you from the other direction. Seized with fear, you turn and return to the station as quickly as you can.

Let us suppose that you have been made aware of two putative facts that bear on the case. One is that the "project" that one finds between the station and central New Haven is a bad neighbourhood. The other is that young black men are involved in violent crime by a greater percentage than other young men. One might think that your flight was occasioned by an inference from these facts (or "facts"). If so, note that it has the look of an instantiation from a generalization secured by them, for your flight is a reaction to those three men in particular. The inference would appear to be something like, "These guys are dangerous enough to require a retreat to safety." But this is ludicrous. The statistical evidence provides no warrant for such an inference.

Upon reflection, we see that this is not what you've done. You have not responded to that threefold instantiation of any generalization remotely like "Black youths are dangerous enough to run away from if you're alone." What you've done is responded to your *fear*. And what your fear encompasses is the determination that since it is *possible* that these guys are trouble, you're not prepared to risk finding out that they're not. (Let me say, in passing, that what we are discussing in fine in the structure of racial profiling.) It is crucial to take note of two features of this case. One is that in telling this story it is wholly unnecessary to attribute to you any belief in the form, "These guys are trouble," or even "These guys are probably trouble." The other is that the direct object of your action is your fear, of which its direct occasion is those three young men.

To be on the safe side you went back to the station. Did you commit a fallacy? Did you reveal yourself to be a racist? These are tricky questions. Your action is a response to your fear; and your *fear* appears to say, "These guys are dangerous." But *you* say something much weaker, if anything at all. You say, "They *might* be dangerous". I don't for a moment think that this "might" is well understood, except that it isn't at all easy to square it with probabilities as standardly conceived of, nor is it a modal entity such as S4-possibility. Getting these "might"s properly analysed is well beyond what I have time for here. But I think that the "might" of the present case must be seen as being occasioned by your fear, rather than the other way round.

It is clear that sometimes we are seized with irrational fears. Imagine that you are out for a stroll at dusk in Windsor, and that three very ancient fallacy theorists approach. You are sized with fear (and I don't mean fear of boredom), and run into a nearby Esso store. Here your fear was irrational. But is this what we must also say of the other case?

Let me sum up. Often enough what looks like the alethic mismanagement of inductive or statistical generalizations is nothing of the kind. It is the rejection of alternatives that you fear taking. This once again brings to mind the "ought" implies "can" principle. Since fears seize us without permission, it will not in general be the case that such decisions are or embed fallacies; not even when the occasioning fear is irrational.

Susceptibility to Error

I have not done much to show that the fuzzy set of fallacies known as the Gang of Eighteen are not fallacies for practical agents, but rather are scarce-resource compensation strategies for beings whose natures and circumstances compel them to prosecute their cognitive agendas on the cheap. Except for the little I have said here about hasty generalization, making good on this claim in the other seventeen cases is a pledge I will have to redeem elsewhere. I will bring this paper to an end with some reflections on the factor of false apparency.

In the approach that Gabbay and I take to practical reasoning, hasty generalization (to stay with this example) is a scarce-resource compensation strategy. If, on a given occasion, your hasty generalization turned out to be right, then well and good. You were well served by one of your cognitive traits, namely, a disposition to generalize hastily. If, however, you got it wrong --- not a little wrong, but *wrong* --- you have paid the price of fallibility, but you haven't committed a fallacy that anyone has yet to recognize in relation to hasty generalization. You made a mistake all right; but since your target was not a *strong induction*, it is pushing things a bit to convict you of the inductive fallacy of hasty generalization.

Different types of agents are differently situated. Institutional agents, such as NASA, are a case in point. They command far greater collateral resources than we do, and the targets they aim for typically require that different standards be met. Thus any generalization about O-ring integrity should be subject to the highest inductive standards. Hasty generalization is not wanted here.

Notice, then, what we can say about hasty generalization is that it is a bad form of argument, which it is for NASA, which nevertheless looks alright, which it is for you and me. So hasty generalization is a fallacy in the traditional sense of being bad while looking good. But it is not a fallacy for practical agents. Likewise, in our affection for hasty generalization we display a susceptibility to err. But the error is NASA's, not ours. It is a susceptibility we should welcome.

Notes

[1] This requires me to correct my Abstract but it threatens Larry Powers [1997] with early retirement from fallacy theory. Perhaps a career in metaphysics beckons, or real-estate, which pays more.

[2] I note, in passing, that not everyone accepts this principle. According to Christian moral theology, the closest we can come to it is: "ought" implies "frequently can". Then, too, there is a confusion that we should try to avoid. In saying that a better performance is not possible for agents of type so-and-so, it is not required that we deny their betterness. It is required only that we resist the inference that a possible performance that is less than better for agents of this type is subpar for them.

[3] Ignoring for now that modern (from 1879 onwards) traducers of psychological considerations did so in the context of a conversion of logic from a science of reasoning into a branch of pure mathematics.

[4] Also ignoring the very difficult, and ancient, problem of "first premises," i.e., formulae that attain the goal as consequences, so to speak, of the empty set of premises.

[5] Thus, as widely supposed, strict consequence is certainty-preserving. Aristotle, however, notoriously dissents from this view. It may be that he was equating certainty with obviousness.

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